General

Guideline Title

Occupational therapy practice guidelines for adults with stroke.

Bibliographic Source(s)

Wolf TJ, Nilsen DM. Occupational therapy practice guidelines for adults with stroke. Bethesda (MD): American Occupational Therapy Association (AOTA); 2015. 256 p. [355 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Sabari J, Lieberman D. Occupational therapy practice guidelines for adults with stroke. Bethesda (MD): American Occupational Therapy Association (AOTA); 2008. 168 p. [255 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Note from the National Guideline Clearinghouse: In addition to the evidence-based recommendations below, the guideline includes extensive information on the evaluation process and intervention strategies for people with all phases of stroke (acute care, rehabilitation, and community–outpatient).

Definitions for the strength of recommendations (A–D, I) and levels of evidence (I–V) are provided at the end of the "Major Recommendations" field.

Recommendations for Occupational Therapy Interventions for Adults with Stroke

Interventions to Improve Occupational Performance of People With Cognitive Impairments

- Visual scanning training to improve performance (A)
- General cognitive rehabilitation to improve global cognitive function (B)
- Visuospatial training to improve cognitive function (B)
- Cognitive strategy training to improve performance on trained and untrained tasks (B)
- Gesture training to improve ideational, ideomotor, and gesture comprehension with correlational improvements in activities of daily living (ADL) independence in people with apraxia (B)

- Computerized memory programs to improve memory performance and occupational performance (C)
- Ecologically oriented neurorehabilitation of memory (EON–MEM) intervention to help improve memory performance (C)
- Exercise and recreation program to improve memory (C)
- Time pressure management to improve speed in daily task performance for people with mental slowness (C)
- VMall (a virtual supermarket) to address multitasking (C)
- Exercise or recreation program to improve executive function (C)
- Compensatory training interventions to improve occupational performance in people with visual dysfunction (C)
- Individualized home rehabilitation program to improve cognitive function (I)
- Attention processing training to address attention deficits (I)
- Visual restoration interventions to improve visual dysfunction (I)
- Prism adaptation to enhance functional measures (including wheelchair mobility) and nonfunctional measures of unilateral spatial neglect. (I)
- Mirror therapy to improve occupational performance in people with unilateral spatial neglect. (I)
- Right half-field eye patching to improve occupational performance in people with unilateral spatial neglect (I)
- Neck vibration before occupational therapy to improve unilateral spatial neglect (I)
- Family participation in therapy to improve unilateral spatial neglect (I)
- Spatial cueing to improve wheelchair use for those with unilateral spatial neglect (I)

Interventions to Improve Occupational Performance of People with Motor Impairments

- Repetitive task practice to improve upper extremity (UE) function, balance–mobility, and activity–participation (A)
- Constraint-induced movement therapy (CIMT) or modified constraint-induced movement therapy (mCIMT) to improve UE function and activity–participation (A)
- Strengthening and exercise to improve UE function, balance–mobility, and activity–participation (A)
- Bilateral training to improve UE function when facilitated by a device (B)
- Virtual reality (VR) to improve UE function and activity–participation (B)
- Mental practice to improve UE function, balance–mobility, and activity–participation (B)
- Mirror therapy to improve UE function and activity–participation (B)
- Action observation to improve UE function (B)
- Electrical stimulation to improve UE function (B)
- Telerehabilitation to augment the delivery of functionally based training programs (B)
- Bilateral training without the use of a device for improving UE function or activity–participation (C)
- Electrical stimulation to improve activity–participation (C)
- Peripheral nerve sensory stimulation to improve UE function (C)
- Repeated muscle vibration to improve UE function (C)
- Visual feedback to improve balance–mobility (C)
- Robotics to improve UE function or activity–participation (C)
- Shoulder supports to improve balance and mobility (C)
- Positioning devices, orthoses, and stretching to improve UE function and activity–participation (C)
- Botulinum toxin A combined with therapy interventions to improve UE function or activity–participation (C)
- Brain stimulation in addition to therapy to improve UE function and activity–participation (I)
- Neurodevelopmental treatment to improve UE function or activity–participation (D)

Interventions to Improve Occupational Performance of People with Psychosocial or Emotional Impairments

- Behavioral therapy to reduce depression and improve other psychosocial outcomes (B)
- Multicomponent exercise program (e.g., strength and balance training) to improve psychosocial outcomes (B)
- Care support and coordination to improve psychosocial outcomes (B)
- Community-based rehabilitation to improve psychosocial outcomes (B)
- Single-component exercise programs to reduce anxiety or depression and improve mental health quality of life (I)
- Behavior therapy combined with stroke education to improve psychosocial outcomes (I)
- Stroke education to improve anxiety (I)

Interventions to Improve ADLs and Instrumental Activity of Daily Living (IADLs)

- Home-based occupation-based interventions to improve ADL performance (A)
- Community-based occupational therapy interventions to improve ADL performance for older adults (≥65 years) (A)

- Activity- and occupation-based interventions to increase participation in leisure activity (A)
- Occupation-based interventions to improve ADL performance in the inpatient setting (B)
- VR task simulation to improve UE function (B)
- Rehabilitation program targeting sexual function to improve frequency of participation in and satisfaction with sexual activity (B)
- Community mobility program to increase the number of journeys taken outside of the home (B)
- Driving simulation training to improve visuointegrative skills while driving (B)
- Occupation-based interventions to improve ADL performance in the outpatient setting (C)
- Community interventions to improve IADL performance (C)
- VR to improve performance of street crossing tasks (C)
- Wheelchair skills program to improve wheelchair performance (C)
- Activity- and occupation-based interventions to improve social participation (I)
- Exercise and education program to improve reintegration and quality of life (I)
- Driving simulation training to improve operational and tactical performance during driving (I)
- Hospital-based VR program to improve executive functioning and multitasking during shopping tasks (I)
- VR program to improve community mobility skills (I)
- Tai Chi to improve quality of sleep (I)

Definitions

Levels of Evidence for Occupational Therapy Outcomes Research

Levels of Evidence	Definition
Level I	Systematic reviews, meta-analyses, and randomized controlled trials (RCTs)
Level II	Two groups, nonrandomized studies (e.g., cohort, case control)
Level III	One group, nonrandomized (e.g., before-after, pretest and posttest)
Level IV	Descriptive studies that include analysis of outcomes (e.g., single-subject design, case series)
Level V	Case reports and expert opinions that include narrative literature reviews and consensus statements

Note: Adapted from "Evidence-based medicine: What it is and what it isn't." D. L. Sackett, W. M. Rosenberg, J. A. Muir Gray, R. B. Haynes, & W. S. Richardson, 1996, *British Medical Journal, 312,* pp. 71-72.

Strength of Recommendations

A–There is strong evidence that occupational therapy practitioners should routinely provide the intervention to eligible clients. Good evidence was found that the intervention improves important outcomes and concludes that benefits substantially outweigh harm.

B–There is moderate evidence that occupational therapy practitioners should routinely provide the intervention to eligible clients. There is high certainty that the net benefit is moderate, or there is moderate certainty that the net benefit is moderate to substantial.

C–There is weak evidence that the intervention can improve outcomes. It is recommended that the intervention be provided selectively on the basis of professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.

I–There is insufficient evidence to determine whether or not occupational therapy practitioners should be routinely providing the intervention. Evidence that the intervention is effective is lacking, of poor quality, or conflicting and the balance of benefits and harm cannot be determined.

D–It is recommended that occupational therapy practitioners do not provide the intervention to eligible clients. At least fair evidence was found that the intervention is ineffective or that harm outweighs benefits.

Note: Criteria for level of evidence and recommendations (A, B, C, I, D) are based on standard language from the U.S. Preventive Services Task Force (2012). Suggested recommendations are based on the available evidence and content experts' clinical expertise regarding the value of using it.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Stroke

Guideline Category

Evaluation

Management

Prevention

Rehabilitation

Risk Assessment

Screening

Treatment

Clinical Specialty

Family Practice

Geriatrics

Internal Medicine

Neurology

Physical Medicine and Rehabilitation

Preventive Medicine

Psychology

Speech-Language Pathology

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Health Plans

Hospitals

Managed Care Organizations

Nurses

Occupational Therapists

Physical Therapists

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Social Workers

Speech-Language Pathologists

Utilization Management

Guideline Objective(s)

- To provide an overview of the occupational therapy for adults with stroke
- To guide future decisions on areas for research by highlighting areas in which specific interventions lack evidence of a clear benefit or in which available interventions fail to meet the needs of adult clients with stroke
- To define the occupational therapy domain, process, and intervention that occurs within the boundaries of acceptable practice
- To help occupational therapists and occupational therapy assistants, as well as the people who manage, reimburse, or set policy regarding occupational therapy services, understand the contribution of occupational therapy in providing services to adults with stroke
- To serve as a reference for other health care professionals, health care facility managers, education and health care regulators, third-party payers, managed care organizations, and those who conduct research to advance care of adults with stroke

Target Population

Adult stroke survivors

Interventions and Practices Considered

1. Interventions to improve occupational performance of people with cognitive impairments
2. Interventions to improve occupational performance of people with motor impairments
3. Interventions to improve occupational performance of people with psychosocial or emotional impairments
4. Interventions to improve activities of daily living (ADLs) and instrumental activity of daily living (IADLs)

Major Outcomes Considered

- Validity and reliability of assessment tools
- Effectiveness of interventions
- Motor and process skills
- Ability to perform activities of daily living (ADLs)
- Performance skills
- Performance patterns
- Quality of life
- Patient satisfaction

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

The following four focused questions from the review of occupational therapy interventions for adults with stroke framed the reviews:

1. What is the evidence for the effectiveness of interventions to improve occupational performance for those with cognitive impairments after stroke?
2. What is the evidence for the effectiveness of interventions to improve occupational performance for those with motor impairments after stroke?
3. What is the evidence for the effectiveness of interventions to improve occupational performance for those with psychological and/or emotional impairment after stroke?
4. What is the evidence for the effectiveness of activity- and occupation-based interventions to improve areas of occupation and social participation after stroke?

Search terms for the reviews were developed by the methodology consultant to the American Occupational Therapy Association, Inc. (AOTA) Evidence-Based Practice (EBP) Project and AOTA staff, in consultation with the authors of each question, and reviewed by the advisory group. The search terms were developed not only to capture pertinent articles but also to make sure that the terms relevant to the specific thesaurus of each database were included. Table D.1 in the original guideline document lists the search terms related to population and intervention included in each systematic review. A medical research librarian with experience in completing systematic review searches conducted all searches and confirmed and improved the search strategies.

Databases and sites searched included Medline, PsycINFO, CINAHL, AgeLine, and OTseeker. In addition, consolidated information sources, such as the Cochrane Database of Systematic Reviews and the Campbell Collaboration, were included in the search. These databases are peer-reviewed summaries of journal articles and provide a system for clinicians and scientists to conduct evidence-based reviews of selected clinical questions and topics. Moreover, reference lists from articles included in the systematic reviews were examined for potential articles, and selected journals were hand searched to ensure that all appropriate articles were included.

Inclusion and exclusion criteria are critical to the systematic review process because they provide the structure for the quality, type, and years of publication of the literature incorporated into a review. The review of all four questions was limited to peer-reviewed scientific literature published in English. The intervention approaches examined were within the scope of practice of occupational therapy and included a performance-based outcome measure. The literature included in the review was published between 2003 and March 2012 and included study participants with stroke. The earlier reviews included studies published between 1980 and 2002. The review excluded data from presentations, conference proceedings, non-peer-reviewed research literature, dissertations, and theses. Studies from published systematic reviews included in these systematic reviews were excluded from individual analysis. Studies included in the review are Level I, II, and III evidence. Level IV and V evidence was included only when higher level evidence on a given topic was not found.

A total of 12,674 citations and abstracts were included in the reviews. For the motor impairment question, there were 4,930 references; for the cognitive and perceptual impairments question, 1,382 references; for the occupation- and activity-based question, 4,101 references; and for the psychological and emotional impairment question, 2,261 references.

The methodology consultant to the EBP Project completed the first step of eliminating references on the basis of citation and abstract. The four systematic reviews were carried out as academic partnerships in which academic faculty worked with graduate students to carry out the reviews. Review teams completed the next step of eliminating references on the basis of citations and abstracts. The full-text versions of potential articles were retrieved, and the review teams determined final inclusion in the review on the basis of predetermined inclusion and exclusion criteria.

Number of Source Documents

A total of 281 articles were included in the final review. The review included 226 Level I studies, 33 Level II studies, and 22 Level III studies.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence for Occupational Therapy Outcomes Research

Levels of Evidence	Definition
Level I	Systematic reviews, meta-analyses, and randomized controlled trials (RCTs)
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Level III	One group, nonrandomized (e.g., before-after, pretest and posttest)
Level IV	Descriptive studies that include analysis of outcomes (e.g., single-subject design, case series)
Level V	Case reports and expert opinions, which include narrative literature reviews and consensus statements

Note: Adapted from "Evidence-based medicine: What it is and what it isn't." D. L. Sackett, W. M. Rosenberg, J. A. Muir Gray, R. B. Haynes, & W. S. Richardson, 1996, *British Medical Journal, 312,* pp. 71-72.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The teams working on each focused question reviewed the articles according to their quality (scientific rigor and lack of bias) and levels of evidence. Each article included in the review was then abstracted using an evidence table that provides a summary of the methods and findings of the article and an appraisal of the strengths and weaknesses of the study on the basis of design and methodology. American Occupational Therapy Association, Inc. (AOTA) staff and the Evidence-Based Practice (EBP) project consultant reviewed the evidence tables to ensure quality control.

The systematic reviews on stroke presented in this practice guideline have several strengths and include many aspects of occupational therapy practice with this population. As noted, the reviews included 281 articles, and 90% of the articles provide Level I and II evidence, indicating that the evidence was at the highest level of evidence. The reviews also involved systematic methodologies and incorporated quality control measures.

The limitations of the systematic reviews are based on the design and methods of the individual studies and may include small sample sizes; lack of reporting of treatment fidelity; and heterogeneity in terms of participant characteristics, intervention protocols, and outcome measures. In addition, many of the studies in the review included concurrent interventions, and separating the effects of a single intervention may be difficult.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

A major focus of the American Occupational Therapy Association, Inc. (AOTA)'s Evidence-Based Practice (EBP) projects is an ongoing program of systematic review of multidisciplinary scientific literature, using focused questions and standardized procedures to identify practice-relevant evidence and discuss its implications for practice, education, and research. An evidence-based perspective is founded on the assumption that scientific evidence of the effectiveness of occupational therapy intervention can be judged to be more or less strong and valid according to a hierarchy of research designs, an assessment of the quality of the research, or both. AOTA uses standards of evidence modeled on those developed in evidence-based medicine. This model standardizes and ranks the value of scientific evidence for biomedical practice using the grading

system presented in the "Rating Scheme for the Strength of the Evidence" field. In this system, the highest level of evidence, Level I, includes systematic reviews of the literature, meta-analyses, and randomized controlled trials (RCTs). In RCTs, participants are randomly allocated to either an intervention or a control group, and the outcomes of both groups are compared. Other levels of evidence include Level II studies, in which assignment to a treatment or a control group is not randomized (cohort study); Level III studies, which do not have a control group; Level IV studies, which use a single-case experimental design, sometimes reported over several participants; and Level V studies, which are case reports and expert opinion that include narrative literature reviews and consensus statements.

The systematic reviews on stroke were supported by AOTA as part of the EBP Project. AOTA is committed to supporting the role of occupational therapy in this important area of practice. Previous reviews were completed covering the time frame of 1980–2002. The current systematic reviews were updated for the period 2003 to March 2012 because occupational therapy practitioners need access to the results of the latest and best available literature to support intervention within the scope of occupational therapy practice.

The four focused questions developed for the updated review were based on the search strategy of the earlier review. These questions were reviewed by review authors, an advisory group of experts in the field, AOTA staff, and the consultant to the AOTA EBP Project.

Rating Scheme for the Strength of the Recommendations

Strength of Recommendations

A–There is strong evidence that occupational therapy practitioners should routinely provide the intervention to eligible clients. Good evidence was found that the intervention improves important outcomes and concludes that benefits substantially outweigh harm.

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Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

This practice guideline was reviewed by a group of content experts for adults with stroke that included a consumer representative.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

The final review included 281 articles. Studies included in the review are Level I, II, and III evidence. Level IV and V evidence was included only when higher level evidence on a given topic was not found.

Number of Articles in Each Review at Each Level of Evidence

Review	Evidence Level					Total in Each Review
	I	II	III	IV	V	
Cognitive and perceptual	27	9	10	0	0	46
Motor	135	19	2	0	0	156
Psychological and emotional impairment	37	1	1	0	0	39
Occupation- and activity-based	27	4	9	0	0	40
Total	226	33	22	0	0	281

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

These guidelines may be used to assist:

- Occupational therapists and occupational therapy assistants in providing evidence-based interventions to adults with stroke
- Occupational therapists and occupational therapy assistants in communicating about their services to external audiences
- Other health care practitioners, case managers, clients, families and caregivers, and health care facility managers in determining whether referral for occupational therapy services is appropriate
- Third-party payers in determining the medical necessity for occupational therapy
- Legislators; third-party payers; federal, state, and local agencies; and administrators in understanding the professional education, training, and skills of occupational therapists and occupational therapy assistants
- Health and social services planning teams in determining the need for occupational therapy
- Program developers; administrators; legislators; federal, state, and local agencies; and third-party payers in understanding the scope of occupational therapy services
- Occupational therapy researchers in this practice area in determining outcome measures and defining current occupational therapy practice to compare the effectiveness of occupational therapy interventions
- Policy, education, and health care benefit analysts in understanding the appropriateness of occupational therapy services for adults with stroke
- Policymakers, legislators, and organizations in understanding the contribution occupational therapy can make in health promotion, program development, and health care reform to support adults with stroke
- Occupational therapy educators in designing appropriate curricula that incorporate the role of occupational therapy with adults with stroke

Potential Harms

Before implementing any new intervention with a patient, it is always prudent for the occupational therapy practitioner to be aware of the potential benefits and harms of the intervention. Clinical reasoning based on a sound evaluation of the patient's strengths and limitations and an understanding of the intervention should be exercised to determine the potential benefits and harms of an intervention for an individual patient.

Qualifying Statements

Qualifying Statements

Qualifying Statements

- This guideline does not discuss all possible methods of care, and although they do recommend some specific methods of care, the occupational therapist makes the ultimate judgment regarding the appropriateness of a given intervention in light of a specific person's or group's circumstances and needs and the evidence available to support the intervention.
- This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold or distributed with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional service. If legal advice or other expert assistance is required, the services of a competent professional person should be sought.
- It is the objective of the American Occupational Therapy Association, Inc. (AOTA) to be a forum for free expression and interchange of ideas. The opinions expressed by the contributors to this work are their own and not necessarily those of AOTA.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Patient Resources

Resources

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

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Association (AOTA); 2015. 256 p. [355 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2008 (revised 2015)

Guideline Developer(s)

American Occupational Therapy Association, Inc. - Professional Association

Source(s) of Funding

American Occupational Therapy Association, Inc.

Guideline Committee

Not stated

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Financial Disclosures/Conflicts of Interest

The authors of this practice guideline have signed a conflict-of-interest statement indicating that they have no conflicts that would bear on this work.

Guideline Status

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This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Not available at this time.

Print copies: Available for purchase from The American Occupational Therapy Association (AOTA), Inc., 4720 Montgomery Lane, Bethesda, MD 20814, Phone: 1-877-404-AOTA (2682), TDD: 800-377-8555, Fax: 301-652-7711. This guideline can also be ordered online from the AOTA Web site.

Availability of Companion Documents

The following are available:

- Occupational therapy practice framework: domain and process. 3rd ed. Bethesda (MD): American Occupational Therapy Association, Inc. (AOTA); 2014. Available to order from the American Occupational Therapy Association, Inc. (AOTA) Web site .
- The role of occupational therapy in stroke rehabilitation. Fact sheet. Bethesda (MD): American Occupational Therapy Association, Inc. (AOTA); 2015. 2 p. Available from the AOTA Web site.

In addition, case studies are available in the original guideline document.

Patient Resources

The following is available:

- Recovering from stroke. Tip sheet. Bethesda (MD): American Occupational Therapy Association, Inc. (AOTA); 2013. 2 p. Available from the American Occupational Therapy Association (AOTA) Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on October 28, 2010. The currency of the guideline was reaffirmed by the developer in March 2012 and this summary was updated by ECRI Institute on October 22, 2013. This summary was updated by ECRI Institute on October 23, 2015.

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